WEATHER OF 1938 IN THE UNITED STATES

By J. P. KOHLER

[Weather Bureau, Washington, D. C., February 1939]

The year 1938 averaged much warmer and slightly wetter than normal. Summations of temperatures over the country reveal that 1938 was one of the warmest years of record. The departure from normal temperature chart, herewith, shows that every first-order station in the United States had above-normal temperature for the year—a condition which probably is unparalleled in the Bureau's records. The excess temperature was largely the result of more or less steady warmth rather than periods of abnormally high temperatures which so strongly characterized the summers of 1934 and 1936, especially in the interior sections.

The greatest plus temperature departures occurred in the interior sections west and southwest of the Lake region over the Mississippi and Missouri Valleys and the Plains States. Notwithstanding the pronounced above-normal temperature trends, many western and northern sections experienced severe cold periods at times during January and February. Minimum temperatures in the northern Plains and northern portions of the Mississippi and Missouri Valleys during these months generally ranged from −35° to the lowest of record for the year, −51° at Long Lake, Wis., on February 1.

Table 1 gives, for the 42 climatic sections, monthly and annual departures of the mean temperature from the normal. This table shows that several States had slightly below-normal mean temperatures in January. The same is true of a few States in February; May and June were generally cool. However, in the remaining months of the year, departures were generally positive, and for the year, only 3 States, Arizona, California, and New Mexico, figured below normal and this by only slight amounts.

TABLE 1.—*Monthly and annual temperature departures from normal, for the year 1938*

Section	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Alabama	+1.7	+6.7	+7.9	+0.5	+1.6	−0.8	+0.1	+1.7	−4.0	+2.0	+1.2	+0.3	+1.6
Arizona	+2.7	−.5	−2.1	−.6	−1.0	−.3	−.9	+.1	+1.8	−.2	−4.5	+2.8	−.2
Arkansas	+1.1	+7.3	+7.7	+.6	+.9	−1.4	+1.5	+3.1	+1.3	+4.2	−.7	+1.0	+2.2
California	+1.6	−2.4	−3.9	−1.5	−.3	+.1	−.6	−.5	+2.0	−1.9	−3.2	+1.8	−.7
Colorado	+3.0	+3.2	+3.2	+1.2	−.3	+1.3	+.1	+2.9	+2.3	+3.3	−4.6	+1.7	+1.4
Florida	−.6	+2.9	+4.1	+.4	+1.2	−1.0	−1.1	+.8	−.7	−2.3	+2.1	−1.1	+.4
Georgia	+.3	+6.1	+5.6	+.3	+1.2	−2.0	−1.3	+1.8	−.6	−.4	+2.6	−1.6	+1.0
Idaho	+3.8	+3.3	−.2	+.5	−1.2	+1.8	+.1	−.9	+6.2	+1.4	−5.6	+2.6	+1.0
Illinois	+.8	+9.3	+8.4	+2.0	+.3	−1.4	+.6	+3.1	+1.2	+4.7	+2.7	+1.0	+2.7
Indiana	+.5	+8.7	+7.1	+2.6	+.4	−1.6	−.1	+2.7	+1.0	+3.5	+2.9	+.8	+2.4
Iowa	+2.5	+6.7	+9.2	+1.6	−.5	−.3	+1.9	+3.5	+3.0	+7.8	+1.4	+2.3	+3.3
Kansas	+4.9	+4.7	+7.4	+.3	−.3	.0	+1.8	+5.1	+2.6	+7.7	−.6	+3.2	+3.1
Kentucky	−.1	+8.6	+7.3	+3.1	+.3	−2.0	.0	+2.2	−.2	+1.7	+1.4	+.2	+1.9
Louisiana	+.9	+5.3	+6.7	−.9	+.7	−.3	+.1	+.6	−.8	+1.4	−1.0	−.1	+1.0
Maryland-Delaware	−.1	+5.3	+4.5	+3.0	−1.1	−.6	+.6	+3.0	−1.9	+.6	+2.9	+.8	+1.4
Michigan	−1.5	+5.3	+6.6	+1.8	+.8	−.5	+.3	+4.2	−1.9	+3.6	+2.2	+1.4	+1.9
Minnesota	−.5	+3.7	+8.2	+.7	−1.8	.0	+.3	+3.9	+1.5	+6.5	−1.8	+1.9	+1.9
Mississippi	+.7	+6.6	+7.7	−.3	+1.5	−1.1	+.9	+1.9	+.2	+1.8	+.1	−.7	+1.6
Missouri	+2.3	+8.3	+9.6	+1.5	+.6	−1.2	+1.7	+4.6	+2.3	+6.4	+1.5	+1.8	+3.3
Montana	+5.2	−3.8	+2.2	+.4	−1.2	+1.6	+.4	+.2	+7.5	+2.8	−3.2	+3.4	+1.3
Nebraska	+5.1	+2.4	+6.6	+1.1	−.9	+1.4	+1.8	+4.7	+3.2	+7.7	−1.3	+3.3	+2.9
Nevada	+5.8	+.9	−2.0	+1.4	−.1	+1.0	.0	+.7	+4.8	+.9	−4.4	+4.2	+1.1
New England	−1.3	+3.4	+1.9	+2.6	−1.5	+1.5	+.6	+3.3	−2.3	+3.0	+2.6	+2.1	+1.3
New Jersey	+.1	+4.8	+4.1	+3.3	−1.4	−1.6	+1.0	+3.6	−2.3	+1.5	+2.0	+1.1	+1.4
New Mexico	+.5	+1.0	+1.0	−.4	−1.1	−.5	−1.5	+1.2	−.7	+.9	−4.0	+2.0	−.1
New York	−.9	+5.1	+4.9	+2.4	−.9	+.5	+1.1	+3.7	−3.6	+2.4	+2.7	+2.1	+1.6
North Carolina	−.6	+5.3	+5.5	+1.7	+.9	−1.8	−1.2	+1.9	−.2	−.4	+2.9	−.5	+1.1
North Dakota	+3.4	−2.4	+9.3	+1.4	−1.4	+1.1	+.9	+3.4	+5.1	+7.1	−2.8	+5.5	+2.6
Ohio	+1.5	+8.1	+7.3	+3.0	+.8	−1.0	+.5	+3.2	+.1	+2.4	+2.6	+1.3	+2.5
Oklahoma	+3.9	+5.4	+7.3	−.9	+.5	−.3	+.5	+2.9	+1.4	+5.5	−1.0	+2.3	+2.3
Oregon	+3.0	.0	−2.2	+.2	−.1	+1.7	+1.6	−1.8	+4.2	+.3	−4.2	+1.7	+.4
Pennsylvania	+.4	+5.8	+5.0	+2.7	−.7	−1.0	+1.0	+3.5	−2.2	+2.2	+1.4	+.9	+1.6
South Carolina	−.4	+5.3	+5.6	+.5	+1.4	−1.9	−1.6	+2.4	.0	−.7	+3.0	−.6	+1.1
South Dakota	+2.9	−.5	+6.7	+1.6	−1.1	+1.9	+1.6	+5.0	+3.9	+7.4	−2.4	+4.1	+2.6
Tennessee	+.4	+7.9	+7.3	+1.7	+.9	−2.1	+.5	+2.5	−.4	+2.1	+1.1	−.3	+1.8
Texas	+2.0	+4.3	+5.7	−1.6	+.5	+.4	−.1	+.8	+.4	+2.9	−2.2	+1.4	+1.2
Utah	+5.0	+3.1	−.6	+1.0	−2.0	+1.0	+1.7	+.6	+3.5	+1.2	−6.9	+4.0	+1.0
Virginia	−.3	+5.8	+5.1	+2.4	−.4	−1.6	.0	+2.0	−1.1	−.2	+2.8	.0	+1.2
Washington	+3.4	+.8	−.5	+1.2	+.7	+2.4	+2.9	−1.8	+5.9	+1.4	−2.9	+1.6	+1.3
West Virginia	+.7	+7.6	+5.8	+3.0	−.6	−1.7	+.4	+1.9	−.6	+.4	+1.5	+.1	+1.5
Wisconsin	.0	+6.5	+6.8	+1.8	−.1	−.6	.0	+3.2	−.7	+4.8	+1.2	+.7	+2.0
Wyoming	+2.3	+2.4	+2.7	+1.1	−1.0	+1.5	−.6	+1.1	+4.3	+4.0	−5.9	+2.2	+1.2

Recent studies[1] indicate that the tendency to higher temperatures which set in about 1900 has been definitely outstanding in the last decade. Temperature records for the past 20 years show 1929 as the only year appreciably cooler than normal, for the country as a whole; 1919 and 1924 were slightly below normal. The remaining years had above-normal warmth.

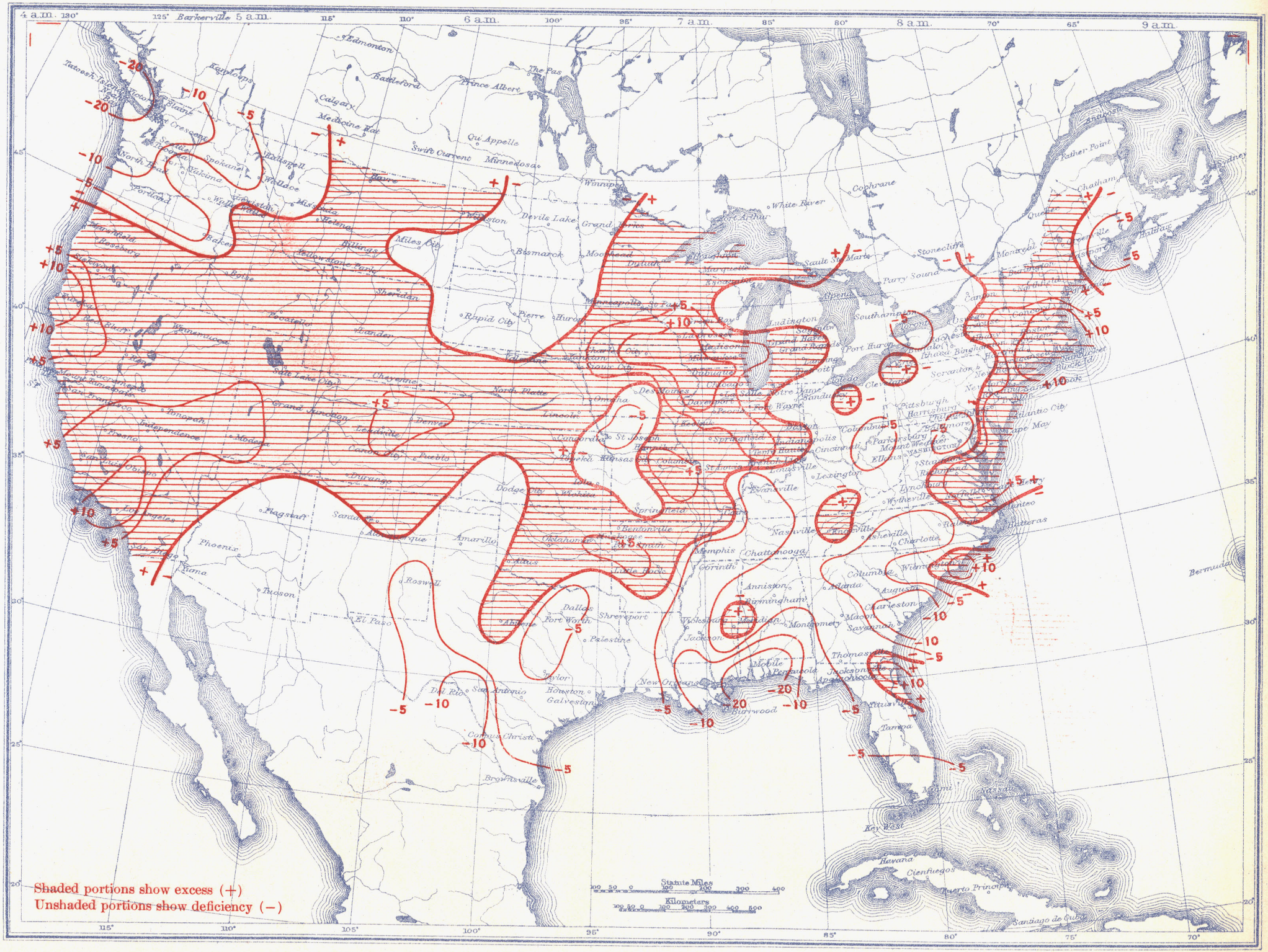
Precipitation during 1938, while slightly above normal for the year, was generally much above the average in the first half of the year, and deficient in the last half in some midwestern States, especially in the north and central portions of the Great Plains. The average for the year was 29.47 inches, about 1 percent above normal. In 1937, rainfall averaged 30.34 inches; 27.14 inches in 1936; 29.34 inches in 1935, and 25.95 inches in 1934. Since the normal is 29.11 inches, the last 2 years have had above-normal rainfall.

Table 2 shows the monthly and annual distribution of precipitation in percent of normal for the 42 climatic sections. For the year, as a whole, most States had above-normal rainfall. The South Atlantic and Gulf States and

[1] From notes by J. B. Kincer, U. S. Weather Bureau, Washington, D. C.

Annual Temperature Departures (°F.) in the United States, 1938

Annual Precipitation Departures (inches) in the United States, 1938



the northern Great Plains were relatively dry, but all others, except locally, had above-normal rainfall. Colorado, Nevada, Wisconsin, Utah and the New England sections had considerable in excess of the usual annual amount.

The annual precipitation departure chart, herewith, is constructed from data furnished by nearly 200 first-order Weather Bureau stations, and gives some idea of the local variations in the yearly rainfall. The greatest positive departures prevailed in the upper Mississippi Valley, and along the New England and North Atlantic coasts, while in the Gulf and Southeastern States, the Dakotas, and the extreme Northwest, deficiencies ranging from 1 inch to more than 20 inches at some stations along the east Gulf coast.

Temperature extremes during the year were well within the limits of previous records. The highest maximum reported was 125° at Cow Creek, Calif., on several days during July and August. The lowest temperature reported was −51° at Long Lake, Wis., on February 1. Temperatures of freezing or below occurred in every State sometime during the 12 months; and during the summer months of June, July, and August minima of 16° to 22° were noted in several western Mountain States. The lowest temperature recorded in Alaska during the year was 64° below zero in February at Fort Yukon.

The greast monthly amount of precipitation reported from any station in the United States was 38.05 inches at Inskip, Calif., during February. By way of contrast, one station in Hawaii received 98.78 inches during April.

TABLE 2.—*Percentage of Normal Precipitation, 1938*

Section	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
Alabama	69	36	107	223	89	105	139	86	42	12	102	54	92
Arizona	59	145	229	42	69	296	73	93	76	14	7	183	101
Arkansas	151	183	126	99	91	106	99	62	46	30	145	69	102
California	77	220	232	121	42	59	214	80	80	131	47	76	128
Colorado	108	102	167	115	130	121	75	90	228	74	116	99	117
Florida	75	44	60	46	101	101	117	54	86	111	74	50	82
Georgia	49	23	76	191	100	126	132	58	74	26	100	63	85
Idaho	86	110	195	106	94	116	187	85	55	186	94	74	113
Illinois	112	112	183	92	124	128	144	99	86	50	85	73	109
Indiana	56	117	168	74	136	134	157	95	86	31	98	59	104
Iowa	107	87	136	134	133	100	114	108	149	37	170	60	115
Kansas	68	115	143	93	201	102	90	80	78	17	107	24	102
Kentucky	82	69	134	72	142	94	176	119	119	17	106	47	101
Louisiana	103	70	79	152	55	99	100	123	73	41	104	65	90
Maryland-Delaware	72	82	79	50	127	105	173	63	189	68	107	89	101
Michigan	135	190	127	63	115	100	93	162	85	43	66	104	103
Minnesota	80	107	127	151	207	84	98	81	126	26	162	78	113
Mississippi	97	65	104	174	61	126	107	93	46	32	91	66	92
Missouri	132	160	157	95	127	99	93	67	45	42	165	90	102
Montana	68	99	132	62	145	123	141	81	64	170	91	64	109
Nebraska	64	89	129	123	141	70	97	70	134	11	92	26	95
Nevada	63	178	215	162	134	220	211	82	39	236	80	43	134
New England	121	76	71	87	109	162	208	92	247	68	88	118	122
New Jersey	102	64	57	78	94	210	185	65	272	72	108	77	116
New Mexico	102	135	113	56	58	186	90	41	205	96	41	110	101
New York	100	112	81	87	86	100	129	115	221	40	92	100	106
North Carolina	79	39	78	123	118	131	133	51	147	40	152	84	97
North Dakota	102	148	78	75	109	80	134	72	40	52	140	62	89
Ohio	54	111	157	102	142	108	131	92	134	27	116	50	105
Oklahoma	99	330	193	85	126	114	88	68	60	17	108	37	101
Oregon	89	148	195	94	48	74	113	31	71	107	90	65	101
Pennsylvania	77	96	93	83	99	123	112	70	137	56	108	81	95
South Carolina	42	22	57	207	114	101	119	40	120	36	122	76	85
South Dakota	95	105	110	114	117	77	78	49	140	12	85	46	88
Tennessee	114	57	104	105	140	116	144	105	89	20	121	55	100
Texas	146	116	102	110	83	102	131	55	54	33	66	76	88
Utah	76	117	208	91	148	123	76	104	76	162	122	91	118
Virginia	86	53	81	78	113	151	160	60	127	42	157	92	101
Washington	71	91	136	100	55	48	55	45	51	120	77	83	84
West Virginia	61	96	103	87	149	132	122	63	122	32	143	54	99
Wisconsin	171	185	146	121	141	127	122	155	199	54	128	96	137
Wyoming	101	67	112	101	124	95	131	97	111	107	144	92	109

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[RICHMOND T. ZOCH, *in Charge of Library*]

By AMY P. LESHER

RECENT ADDITIONS

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